Strongyloides stercoralis complex in humans and dogs: insights from population genomics in Asia

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Strongyloides stercoralis is a parasitic nematode that infects people and is widespread in tropical and subtropical regions. It has been assumed that *S. stercoralis* transmits only among people. However, accumulating evidence has suggested that *Strongyloides* from people and dogs are the same species, so that dogs can be infected with it and act as a source of human infection. To investigate the host range of *S. stercoralis*, the current study sampled sympatric populations of worms from people and dogs in Asia. Individual *Strongyloides* larvae from people and dogs were subjected to whole genome sequencing. DNA reads from each individual sample were then used to investigate the parasite's population genetics. The epidemiological data revealed a higher *Strongyloides* prevalence in people than in dogs in Thailand, though in communities in Bangladesh and Cambodia the prevalence in people and dogs was more similar. This indicates that the transmission of *Strongyloides* between people and dogs might vary across Asia. Population genomic analyses showed that people were infected with a range of closely related *S. stercoralis* genotypes that were widely dispersed across Asia. In contrast, parasites from dogs clustered into five genetically distinct groups, with four clusters differing from those found in humans. Interestingly, one genotype from a dog in Cambodia clustered with those found in humans. These data suggest that *Strongyloides* in people and dogs in Asia are different parasites, though dogs may be able to be infected with *Strongyloides* from people.